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Pricing Process as a Capability: A Case Study

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W O R K I N G P A P E R S E R I E S

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The pricing literature in marketing, strategy, and economics has tended to focus on what prices are or should be, rather on the process by which firms set prices. Further, pricing is often seen as a tactical, rather than strategic, decision that does not require the involvement of senior management.

This report offers a very different view of pricing. Using a resource-based perspective, authors Dutta, Zbaracki, and Bergen argue that the price-setting process is a capability based on a combination of routines, coordination mechanisms, systems, skills, and other complementary resources that are difficult to imitate. In a study of the pricing process of a large, Midwestern manufacturing firm, they offer evidence that the process by which prices are set is a "value-extractive" capability, and hence can be a source of competitive advantage.

Case Study

Using in-depth interviews, on-site observation, and recorded data the researchers delineated two major dimensions of price-setting capabilities at the focal firm: internal price-setting capability within the firm and external pricing-setting capability vis-à-vis customers. The internal price-setting process had three major components: identifying competitor prices, setting pricing strategy, and performing analysis of proposed prices and gaining commitment to the new prices. Each of these involved a series of nested routines and sub-routines involving various members of the firm.

Similarly, external price-setting capability required resources, skills, and routines, first, to convince customers of the logic behind a price change and, second, to negotiate specific prices with major customers. The process of "selling" prices to customers required that the firm develop routines to gather and disseminate information on the pricing norms of its distributors and immediate customers and also its customers' customers.

Managerial Implications

Any firm can match a single price. This task is complicated when a firm sells hundreds or thousands of products to multiple differentiated customers and multiple competitors—the typical reality of any large producer. In order to extract value created, the pricing process should consist of a variety of routines and procedures that cut across multiple conflicting groups and involve members of the firm and the various customers purchasing the firm's products.

Pricing decisions depend on the ability to respond adaptively to the decisions of competitors and customers. Firms compete on price not solely in setting day-to-day prices, but also in building and developing price-setting capabilities that define the pricing outcomes well into the future for the firm.

Viewing the process by which prices are set as a capability suggests that the real pricing questions in marketing lie in the decisions a firm makes about its pricing process capabilities. In that context, any particular pricing decision matters much less than the resources, skills, and routines—the capabilities—applied to enhance the effectiveness of the price-setting process.

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Introduction

For too long pricing has been viewed as a tactical, rather than strategic, decision; research has focused on prices rather than on firms' capabilities to enhance their ability to set prices. This has left senior management at arm's length from pricing.

In this paper, bringing perspectives from the strategy literature to bear on the pricing process, we argue that the process to set prices within a firm is indeed a capability. Based on a study of the pricing process of a large, Midwestern manufacturing firm, we try to understand the process by which firms set or change prices, including any resources, routines, and skills that might help or inhibit a firm in setting the right price—and hence in extracting value from a strategy. We offer evidence that suggests that the process by which prices are set is a "value-extractive" capability in the resource-based tradition, and hence can be a source of competitive advantage. We also show how lack of pricing capability prevents a firm from extracting a higher value and how development of that pricing capability enables it to capture a higher share of the value it creates.

Method and Data

Research Setting

We studied the price-setting processes of a large, Midwestern industrial firm that manufactured parts used to maintain machinery in automotive and other related sectors. The company was a market leader in its industry and sold more than 8,000 parts across three product lines. The company sold its products to original equipment manufacturers, to end users, and to value-added resellers that would sell the components to end users. Our study addressed primarily the market for components sold through the various value-added resellers. The firm had a reputation as a high quality producer and as an innovator in these markets. Managers had invested significantly in product, process, and pricing capabilities over the past 10 years. Product capabilities included a new high performance product line and process capabilities included two new production facilities. What we call "pricing capabilities" included considerable resources invested in the pricing process. The relatively high profitability the firm had enjoyed over the years supported its position as a market leader.

Data Sources

To improve the validity of the theory developed we used the triangulation methods described by Huberman and Miles (1994) and Eisenhardt (1989). We gathered data from multiple sources within the company, seeking consistent themes across different activities in the price-setting process. Our three main sources of data were interviews, non-participant observation, and records data. We also gathered data over the course of two annual "pricing seasons" during which the firm sets its prices. Data collection for the first season was retrospective; we interviewed participants and gathered their stories about the pricing process. Data for the second season tracked the price-setting process as it occurred.

Interviews. We began by conducting interviews with the organizational members directly responsible for defining and implementing the pricing strategy. We sought a detailed description of the price-setting process, including the tasks and participants involved, the data-processing requirements, the routines used, and the sources of disagreement among participants. We then interviewed a broader range of participants, including the vice president in charge of marketing, the director of sales, the marketing director, and area managers for the salesforce, as well as members of the salesforce, support staff responsible for maintaining pricing information, systems analysts responsible for maintaining the pricing systems, and former employees who had been central to pricing. We also interviewed various customers for detailed descriptions of how customers dealt with changes at the focal firm. We sought to understand the relationship between the customers and the focal firm, as well as the relationship between the customers and other firms selling comparable products.

The interviews took place over the course of two pricing seasons and were conducted at the firm or, for customers, at the place of business. In total, we interviewed 27 informants: all the participants at headquarters and a representative sample of the salesforce and customers. All but one of the interviews were taped and transcribed. One customer did not want to be taped, so one researcher asked questions while another took detailed notes. The interviews varied in length from 45 minutes to over seven hours. We interviewed five informants twice, two informants three times, and the main pricing coordinator nearly every time we visited the research site.

Non-participant Observation. Some members of the research team sat in on pricing meetings over the course of the second pricing season. We also observed various interactions among pricing team members while we were on site. In addition, various members of the organization demonstrated for us their computer resources and various other pricing tools.

Records Data. Different kinds of record data provided information about price-setting actions at the organization. We collected copies of list prices and supplemental prices for both pricing seasons that we studied. Where available, we collected notes and other documents from the first pricing season. We also collected a complete set of minutes and supplemental documents from meetings over the second pricing season, copies of e-mail messages circulated among the central price-setting team, and copies of special pricing requests (e.g., discounts and rebates off of list price) for several pricing seasons which gave a comprehensive account of salesforce pricing requests that had been approved by management. We also collected detailed records of time spent on pricing activities by the pricing coordinator, as well as information about those activities and about others involved. When available, we collected accounting information on the costs of pricing activities (including such varied items as travel costs, the costs of computing systems, and the cost of publishing prices to customers). Over the course of the study and the data analysis, two of the authors contacted the pricing coordinator for clarification about documents or for additional documents or information as needed.

Data Analysis

Following the logic of inductive case study methods (Eisenhardt 1989; Huberman and Miles 1994) our data analysis proceeded in an iterative manner, first analyzing the data and comparing the data to existing theory, then developing new theory, returning to the data to see how our theory matched the data, and again returning to the theory for yet another revision. Initially we sought simply to understand the process of setting and changing prices. When we started the fieldwork we believed that this process was relatively straightforward. The literature on pricing suggests that firms first assess customer elasticity and competitive prices and then set prices to maximize profits (Pashigian 1998). As we studied the process of setting or changing prices we quickly realized that the price-setting process is complex and the existing theories on pricing did not capture this complexity. The evidence, however, was consistent with what we knew about the extensive resources and coordination required of other firms pursuing strategic pricing initiatives. We con-

cluded that a theory of the process by which prices are set or changed must address the different resources and capabilities required.

In the next section, we describe our framework, detailing evidence of the process by which prices are set.

A Resource-based Perspective on the Pricing Process

Pricing Setting as a Capability

As noted earlier, the literature in marketing, strategy, and economics has looked at individual prices rather the process by which firms set prices. This may be because the predominant view is that the price-setting process is a simple task that is relatively costless. For example, Rao, Bergen, and Davis (2000) state that "managers tend to view a price change as easy, quick, and reversible." The evidence from our study, however, suggests that pricing is a surprisingly difficult process. Consider the challenge faced by the pricing manager of the firm that we studied. He learned that his competitors were tailoring their prices to individual customers by offering different levels of discount on different products to different customers. His pricing system could vary discounts across customers, but could only offer a single discount for the entire selection of products that each customer purchased from the firm. As he described the situation:

> People were discounting one level of [list price] for everything in the [price list]. This happens today and it drives me insane. There are parts that are driving our business and you do not discount [them]. This was our fundamental problem. [Our competitor] had a program and they were using it against us and it was frustrating me. I had to match what they were doing. Our pricing system did not allow us to do that.

The lack of a more adaptive pricing system precluded them from analyzing changes in prices across all their products. In many cases, it was simply easier to either offer a customer a bigger discount across all products and lose money on the products for which the firm could get a higher price, or offer a smaller discount on all products and lose the business on the products for which the competitor was offering a lower price. The pricing manager continues:

> There is a desire to unbundle [prices] across products. It is not that we do not want to sell these products together; it is more that we do not want to have across-the-board discount for all products. Some products are always very price competitive . . . other parts you can't get anywhere else or you buy once in a blue moon. We would give one price off across the board. . . . The fact was there was so much money lying on the table.

Of course the firm could manually compute the level of discount for different products and then offer rebates to match his competitors' prices. However, to do so across 8,000 products and 1,400 different customers was extremely cumbersome.

Any firm can match an individual price. Our evidence suggests this task is complicated when a firm sells hundreds or thousands of products to multiple differentiated customers and multiple competitors—the typical reality of any large producer. In order to extract value created, the pricing process must consist of a variety of routines and procedures that cut across multiple conflicting groups and involve members of the firm and the various customers purchasing the firm's products.

Following the resource-based view, we argue that the price-setting process is a capability based on a combination of routines, coordination mechanisms, systems, skills, and other complementary resources that are difficult to imitate (Wernerfelt 1984; Peteraf 1993; Dierickx and Cool 1989; Teece, Pisano, and Shuen 1997). The extraordinary complexity of the price-setting process precludes presenting all the elements of the pricing process capability. Instead, our perspective delineates two major dimensions of the price-setting capabilities. One is the price-setting capability within the firm. The second is the pricing-setting capability vis-à-vis customers. For ease of exposition we address them sequentially. In reality these two dimensions interact with each other much in the way that most organizational decision processes loop and recycle (Eisenhardt and Zbaracki 1992). We address some of these interactions in the following description of the two dimensions of pricing capabilities. Following this description, we describe how a firm develops its pricing capability and the advantages accruing to that firm.

Price-setting Capabilities within the Firm

The price-setting process within the firm had three major components: identifying competitor prices, setting pricing strategy, and performing analyses of proposed prices and gaining commitment to the new prices.

Identifying Competitor Prices

Setting prices began with efforts to gather competitor data for the 8,000 products that the firm manufactures. The process of figuring out competitor prices was surprisingly complex since the firm covered three major product lines and for each of these product lines the firm faced multiple competitors. Across these various products, competitor features often only partially matched the firm's product features. Thus, extracting value from the price-setting process meant allowing for product superiority (or inferiority) along many dimensions. As one price-setting manager said:

> Let's say that you have 8,000 part numbers. You look at each part number and try to work out who was your competitor—what prices did they have in the marketplace, was it high volume, was it all going to one customer, if so by how much? Are we positioned higher or lower in the marketplace?

The information on competitive pricing is made still more difficult for two reasons. First, much of pricing was a team process. During the first year, the pricing manager described the team involved in setting the list price: "me—I was the pricing manager—three salespeople—the territory manager, the area manager, and a private label person—and product [engineering and design] people." Competitors did not distribute list prices to the firm, so the firm had to rely on members of the salesforce to obtain list price information from customers with whom they had close relations. Subsequently, for many of these products, the marketing group needed to turn to other organizational members, especially engineering, to determine functionally equivalent products.

Second, the list prices only provided a portion of the price information. Competitors generally offered the customers rebates and special discounts off of list prices. This practice of special pricing is quite prevalent in the industry and was mentioned repeatedly by the pricing manager, other members of the pricing team, and all the customers. The salespersons and other members of the firm therefore had to make additional efforts to gather credible price information from customers.

The task of getting competitive information, then, could be described as a series of nested routines: for obtaining competitive data from market sources, for ensuring that the pricing information addressed functionally equivalent products, for docu-

menting the competitive price in a database, and, finally, for accessing the information when necessary.

Setting Pricing Strategy

After obtaining competitive data, participants had to agree on (1) the products/prices that should be compared against competitor prices/products and (2) how those comparisons should be made. During the first year of our study, there was considerable debate among participants on what prices to raise, to leave untouched, and to reduce. The director of pricing described one such dispute. Considering one of the product lines from a marketing standpoint, he observed:

> People who did know us considered us one thing: high price. As a marketer, I did not like that. I wanted good value and I wanted to create a good brand that meant good value, so I knew that I had that as a problem.

In response, he proposed lowering the list price on that product line in order to communicate to the end user that the product was a good value. The salesforce objected. The pricing director described their concern:

> The [sales representative] has a very focused opinion around the fact that we should be the highest [list] price because when he sold to resellers . . . he could come in and say "Take my line. [Our competitor] will sell it to you for $21 and I will sell it to you for $20. The [competitor] price sheet says $35 and mine says $45 so you can make more margins with my product than you can with theirs."

As the pricing director observed, these disputes reflected differing perceptions about whether prices were aimed at resellers or end users.

> The fundamental argument from [the salesforce] to me was that the people who sell the product are the resellers. They don't care what the [list price] is; they care what they pay. And so his mental pricing map of pricing was we created a [list price] for our resellers. My answer was "No, we didn't. You may use it but we created a [list price] for the end user customers. We wanted to attract a good value to the end user."

These differences evoked passionate disputes from the various participants. One participant said, "There was one argument on Tuesday morning that I thought they were going to throw punches."

Such disputes follow naturally (in content, if not in passion) from the goal conflict that the behavioral theory of the firm predicts (Cyert and March 1963). For purposes of extracting value created, however, setting prices requires that the firm establish routines to resolve such goal conflict. These routines take time to develop and therefore cannot be imitated by competitors without investing significant time and resources, i.e., they are subject to time compression diseconomies and hence are hard to imitate (Dierickx and Cool 1989).

Translation from Pricing Strategy to Price

With the competitor database in place, various individuals participated in a series of price simulations to translate the pricing strategy into specific pricing actions. The pricing strategy implied specific changes for various product lines in the company, and pricing analysts analyzed the effects of these changes on different groups of customers, paying special attention to larger customers. A quote from one of the financial analysts involved demonstrates the complexity of customer impact analysis:

> We would do [analysis] at the overall business unit level and then I would pull down into these massive Excel spreadsheets: here is a customer and here are the 3,000 parts they bought last year and here is the 8,000 items in our price list; here are the proposed changes. What would be the impact of that on this customer? And then, let's say we did a [volume discount]. They [the customer], of course, would want their highest volume parts and we took ten percent off of that. What is the impact of that? . . . So we had at least 8,000 lined spreadsheet doing these look-up functions.

These analyses also required nested routines. Each impact analysis required that the pricing team develop assumptions about the customer analyzed, so there were routines established to discuss such assumptions. These assumptions in turn were based on information gathered from participants in different parts of the firm, so there were routines to gather this information. There were further sub-routines to resolve disputes. As we discuss below, participants often disagreed on how a customer would respond to the new prices. Such disagreements again made the decision processes loop or recycle, as participants would have to redo the customer analysis. Moreover, each impact analysis process addressed just one customer and similar analyses had to be repeated for all the major customers and for some smaller customers. As one pricing manager described it:

> There was a discussion going back and forth. . . . There was some attempt to gain a consensus but it was a split [between marketing and field salespeople]—two on the side of lowering the discount and one adamantly opposed to lowering the discounts.

Resolving (or avoiding) such disputes required a detailed analysis of key customers to see what the effects of a price change would be. Objections raised by members required the pricing team to reconsider their assumption or gather additional information. Resolution of these disagreements required a broader set of interconnected resources and higher order coordination mechanisms across these different groups.

Developing pricing capability within the firm, then, combines routines, skills, know-how, and coordination mechanisms. We summarize the elements of internal pricing capability in Table 1.

Table 1. Pricing Capability within the Firm

Activities	Routines	Skills/Know-how	Coordination Mechanisms
Identifying competitor prices	Defining functionally equivalent products Nested routines for tracking competitive prices (e.g., special discounts) -Price database -Data entry -Calling up prices -Tracking product changes (competitor and firm) Accessing competitive price information	Technical know-how about competitive products/product changes Salesforce tacit know-how of field sources for reliable competitive price information	Cross-functional teams to generate equivalent competitive product comparisons Coordination between salesforce and select customers to establish competitive prices
Setting pricing strategy and translation from pricing strategy to price	Collecting customer purchase history Nested conflict resolution routines -Meetings -Hierarchy -Pricing controls Tracking past pricing actions Pricing action analysis -Gathering information -Processing information -Exchanging and resolving assumptions -Coding processed information -Defining actions -Gaining commitment to actions	Systems development expertise Pricing strategy expertise Database skills Financial analysis skills Customer price sensitivity: -Technical analysis -Tacit know-how (experience) on customer response Scenario analysis of customer response	Coordinating knowledge of differing assumptions Developing consensus on assumptions about customers Coordinating knowledge of different pricing strategies Channeling information on pricing actions

Pricing-setting Capability vis-à-vis Customers

The price-setting process only begins when the firm decides on new prices. In our study, the firm's managers were very aware of the importance of "selling the price" to customers and were concerned about the impact their price changes would have on their relationships with customers. If customers did not accept the reasons for the price changes, they would complain or, worse, would want to negotiate the prices with the firm. Thus the firm had to build its capability to (1) convince customers of the logic behind the price change and (2) price-negotiate with its major customers. While Brandenburger and Stuart (1996) suggest that firms may vary in their ability to extract value, they assume that most variation occurs in the bargaining ability of the firm. Here we extend that argument by showing that this value extraction is broader than bargaining: the resources and skills devoted to convincing customers of the logic behind a price change and to price-negotiating with major customers are essential if the firm wishes to avoid ceding value created to the customers. We describe below each of these abilities.

Convincing Customers of the Price Change Logic

The ability to convince customers of the logic behind a price change is complex for at least two reasons. First, it depends on the ability of the organization to agree on pricing actions internally. Although, for ease of exposition, we have separated the discussion on price-setting capability within the firm from price-setting capability with respect to customers, in practice, the two are often linked. Over the course of our interviews, we found that pricing actions taken inside the organization have effects through the organization all the way to the end user. One of the senior pricing managers described such an incident:

> In [one product line] we were 30 percent below the market—we were nowhere, el cheapo. I just slammed [the prices] and you could hear the screams and they were coming from the resellers who had customers who were going "Oh, you are going to increase our prices."

The senior manager recognized that the prices for that segment of the product line were lower than the market would bear. The firm's customers had few alternatives, so it should have been easy to extract more value by simply raising prices. However, while the marketing group saw the prices with respect to the rest of the market, the sales group felt that price increases would jeopardize their customer relationship. If the salesforce did not accept the validity of price changes, they could return the prices to previous levels. One salesperson described how they increased the discount to negate the price increase initiated by marketing:

> In past years when this has happened, I looked at this price sheet in '94 and [the] new one in '95 [and] there was a 3.2 percent difference, we would walk in and sell them at [30 percent off of list price] and I would change the [discount by 3.2 percent] so it was a very simple price change.

If the internal participants fail to agree on a price change, then often pricing decisions taken in one part of the firm are not implemented. While value is created, leading to potential rent, goal conflict (as described by the behavioral theory of the firm [Cyert and March 1963]) results in prices being set lower than necessary and the value created being extracted by the customer. Making price changes requires routines to ensure cooperation between different participants.

Second, convincing customers of the logic behind a price change is complex when the firm relies on distributors to resell the product to customers. The firm must consider whether the distributor's pricing system is capable of adapting to the pricing changes. Consider the problem described by a distributor when the firm changed prices with respect to a customer but did not take into account the costs imposed on the distributor:

> The manufacturer gave them [a large customer] a discount and agreed to match the competitor's price item by item instead of saying, "Here is the discount." That was the biggest challenge to us. We had to have a way to calculate the various rebates based on the price that they gave these people. It was no longer an issue of, okay, 30 off [list price], etc. So I had to do the street level and go by item number and calculate the rebate percentages on every single item by item in the system that they were offering this company.

The effects of a price change extend beyond the immediate customer (distributor) to the customer's customer. Quite frequently, in response to a price change, the firm's customers would tell the sales representatives or members of the marketing group that "their customers were looking for justifications" for a price change. Thus the process of selling prices to customers required that the firm develop routines to gather and disseminate information on the pricing norms of its distributors and immediate customers and also their customers' customers.

Negotiating Price Changes with Major Customers

Even the most convincing logic for a price change may not persuade some customers. In the firm we studied, smaller customers were often "price takers" who would decide whether to buy the product based on the new prices. The internal process of setting the right price for this segment of customers was very important.

For large customers, however, prices could be negotiated. The price-selling capability vis-à-vis major customers required members who had a rich knowledge of the relevant players in the pricing process within the firm. For example, at the firm we studied, one of the senior pricing managers realized that he couldn't have his staff

address pricing issues because his group did not have any individual who knew how all the relevant players in the organization would respond to price changes:

> The problem that I knew we were encountering when we were doing this pricing was that you couldn't delegate this to anybody because nobody had been around ten years to know what was going on.

Further, price-selling capability vis-à-vis customers required members who had a rich knowledge of their customers. Specific relationships between customers and members of the firm can affect the ability of the firm to negotiate with its customers. Reputations built over past exchanges extend into future relationships and can ease the price negotiation process. A member of the salesforce described such an instance:

> Another example is of a distributor who is one of our top five in New York City. The two principals of that company were two fathers of the business and they were the two ornery men—tough—and they would squeeze us every time we went in there and it was hell. I would come out of the office physically and mentally exhausted and they were the old school and it was an education for me. This goes back a ways. And now their sons take over and I would never say anything but it is a piece of cake. . . . [B]ecause of the relationship that I had established with the fathers I gained respect with the sons and they don't push me.

Here a reputation gained through repeated interactions in the past led to easier negotiations and better terms across a variety of related issues. In other words, the respect built on past exchanges made it easier to extract a share of the value created. Strong social ties translated into better prices (Uzzi 1999).

Given the variety of data and participants, effective price negotiation with a customer required many interconnected resources and coordination mechanisms. Our work thus builds on the research by Brandenburger and Stuart (1996), by suggesting how managers and firms can enhance their price bargaining abilities. The resources, coordination mechanisms, and complex routines required suggest that pricing process capabilities vis-à-vis customers—especially major customers—took time to develop. Once developed, however, they lead to higher value extraction. We summarize the elements of external pricing capability in Table 2.

Table 2. Pricing Capability vis-à-vis Customers

Activities	Routines	Skills/Know-how	Coordination Mechanisms
Convincing customers of the price change logic	Information exchange with customers' pricing systems Identifying effects on customers' customers Sending information to pricing team Preparing price change presentation -Educating pricing team for customer presentation -Developing customer presentations -Educating customers	Technical skills: pricing tool kit and price change effects Know-how on customer response Tacit know-how to separate sincere concerns from negotiating postures	Learning about different perspectives Developing consensus within firm and sales force on new prices Learning of customer response
Negotiating price changes with major customers	Organizational hierarchy approval of new prices Customer assessment: -Past discounts; -Past performance; -Alternatives available; -Information accuracy Development of negotiation materials (repeats overall firm analysis at customer level)	Knowledge of firm members' biases and relations with customers Know-how about competitive offerings Knowledge of customer negotiation strategy Cross-functional negotiation expertise Customer price sensitivity analysis: -Systems knowledge -Data analysis -Finance -Customer	Consensus among participants on new prices Consensus in negotiation team on negotiation strategy

In the next section, we describe the actions taken over years to develop pricing capability in the firm and show how these capabilities enabled the firm to extract a higher value vis-à-vis a major customer.

Developing Pricing Process Capabilities

Clearly, prices can be readily adjusted. From the perspective of competitive strategy, however, the challenge is extracting value by making effective price changes. The evidence from our case study suggests that developing that capability requires coordination across various participants in the pricing process. That coordination involves developing systems, structures, and routines that can generate effective price changes. Moreover, developing these mechanisms must always begin from the base of existing systems, structures, and routines; a firm cannot simply abandon existing mechanisms. Here we describe the actions taken by the firm to develop its internal and external pricing capability and how these developments enabled the firm to extract higher value from a large customer.

Developing Internal Pricing Process Capability

The antecedents to the firm's internal pricing process capability can be found in the vision of a senior pricing manager. When he began setting prices, this manager encountered considerable difficulty responding to competitor pricing actions. Historically, the firm had been a market leader and had been quite successful with a simple "cost-plus" pricing system. The firm developed a spreadsheet of prices that pricing managers adjusted as they saw fit. The senior pricing manager said about the historical system,

> [We] would say "Here is a price increase across the board," and that was it. . . . We didn't have market data or understand much about each of the competitors or fully understand what the market was.

He also had no information on the exact price certain customers had paid for their previous purchases because the salesforce could offer special prices, discounts, or other subsidies. The discounts would not show up in the list prices the firm set. For example, the manager discovered that he couldn't keep track of prices from year to year:

> I knew when it got to the next year I couldn't remember why the hell I had priced the way I did and I would have customers calling me saying, "What did you just do to me?" I had no idea why I had priced. What I found going through that is part-number by part-number there were different issues, different competitors, reasons why it needed to be.

The senior manager therefore sought a system that could help him get more accurate information when setting prices. That system anchored the pricing capability at the firm we studied. The manager indicated that his whole purpose in designing the pricing system "was to try to maximize the profitability in the market-

place." Doing that, however, required setting up routines and processes for tracking the data and the reasons for setting prices:

> So the whole design of the [computer system] was we need a rule-based pricing system. . . . [The pricing computer system] gives you a database to understand and report what you did, why you did it, and flag to you when a variable changes.

The computer system itself, however, was only a small portion of this "rule-based pricing system." The rule-based system needed a dedicated staff, and a variety of systems and routines for support, without which the firm could not overcome the goal conflict that would lead to sub-optimal prices. The pricing manager had convinced senior management to give him dedicated staff with know-how in pricing and systems and additional resources to set up these new routines.

> I had dedicated staff on board and people with clear responsibilities. . . . X manages the competitive prices and the files, and ensures we put them out into toolbox [price generation system] to be more responsive. . . . I had Y and Z working on an enormous effort—the price generation system so that we could develop this data-base and a rule based system. Part of that [system] was the simulation capability to tell me the overall monetary effect of that decision.

Implementing these systems took nearly five years from the time the manager first began pricing products to the time the combination of systems was fully operational. These pricing capabilities, we argue, are therefore susceptible to "time compression diseconomies." The organizational knowledge required in the price-setting process was distributed throughout a variety of participants and was acquired only through repeated interactions and experience with the pricing tasks and participants. It took time for everyone to develop experience with the new system, with the concept behind the system, and with the specific pricing context. It could not be acquired overnight through a company-training program.

Indeed, many of the advantages of the system were only discovered after years of experience. During the second year of our study, for example, the participants had begun to find ways to use the new systems to do new analysis on pricing actions through a "market-basket" of typical products. That allowed increased confidence in the effects of a pricing action. Other benefits required years of data to accumulate. For example, while the new system allowed the firm to track various actions taken in past years, the firm needed to accumulate a base of enough historical data in the system to be able to identify those actions. Furthermore, gaining commitment to pricing actions from all the relevant participants required developing new interaction routines with the new system.

Developing Pricing Process Capability vis-à-vis Customers

The fundamental pricing task is always accurately matching price to customer value (Nagle and Holden 1997; Dolan and Simon 1996). If a firm sets price too

high, for example, some potential customers may not buy the firm's products. Conversely, effective price setting can lead to higher quantity demand.

We have argued that to set the right list prices a firm needs routines and resources to know when a price change improves the match between price and value to the customer. In the previous section we outlined the systems, procedures, and routines that demonstrate this internal pricing capability.

However, a firm also needs to develop capabilities with respect to its customers, because most firms must negotiate prices with their large customers. In that respect this firm was typical. Even with the systems developed and installed, the new pricing director (the replacement for the pricing director who had created the internal capabilities) found that there was continued pressure to reduce prices:

> There is always pressure in lowering the price. I wanted it tied to something different than the past. In the past it has always been, "We are a loyal distributor" or "You have to make me more competitive."

The problem the pricing director faced was knowing whether the lower price a customer wanted was appropriate. If the price requested was too low, the firm would cede value created to the customer. If the price was too high, the quantity sold would be too low. The pricing director realized that a pricing capability, consisting in part of what she called a "template," had to be developed to determine the validity of such demands from large customers. At her request the pricing analyst "made a template for us to use with distributors. . . . We determined what we thought would be the critical data that would tell us whether we were getting our money's worth [from a customer] for the pricing we were getting." The price-setting template was based on the internal systems and routines established by the previous pricing director. Rather than focusing only on the competitive needs of a customer, the template also compared the discounts offered to a customer with those of comparable customers. The template thereby more effectively measured the effects of the discounts and rebates offered in negotiation, allowing the manager to target prices specifically to a customer.

Like the internal capabilities, these external price-setting capabilities take time to develop. Once the system was in place, the firm began to uncover new uses. The template the pricing director developed subsequently altered the negotiation process. For example, the negotiating teams began to incorporate people with finance, accounting, and computer support skills. Here again, we can see that the price-setting capabilities with respect to customers are subject to time compression diseconomies (Dierickx and Cool 1989). Once developed, they can lead to competitive advantage for the firm by increasing the ability of the firm to respond more effectively to pricing requests from large customers.

Value Extraction Through Pricing Process Capability

Here we demonstrate how pricing capabilities increase a firm's ability to generate higher profits and more accurately allocate value. We show how the firm used its

pricing capabilities to extract a higher surplus from its customers by reversing a cycle of lower prices with an important customer.

In the first pricing season, the manager for one of the large customers compared the discount his company had received to the discount offered to a major national customer. The manager already had one of the deepest discounts offered by the firm, but he wanted a still deeper discount to match the special contract negotiated by the firm with the national customer. The former director of pricing had responded with a discount larger than the large customer had received, but smaller than the national contract. The senior manager at the large customer rejected this larger discount. In the meantime the pricing director resigned; the new pricing director describes her discussions with the customer:

> They said all [the] things that they didn't like about our company. . . . How we hadn't been supporting the dealers well. It all came to the same thing: if you just gave them pricing [lower prices] that would be support.

The new pricing director used the systems developed by the old pricing director, in conjunction with template she created and the negotiating team she had put together, to assess whether the lower prices demanded by this large customer were warranted. The template allowed her to compare the discounts offered to this customer with those of comparable customers. Through a detailed analysis of the customer's pricing, the pricing director found that the deal currently on the table was already too generous:

> We did a ton of analysis. I had all the data in front of me and there was nothing that should tell me they should get a deeper discount—they had one of the sweetest deals going because of their size and it was a lot of pressure. We went in with a ton of data and I made them wade through my strategies and at the end they said, "What are you going to give us?" What I gave them was another incremental growth program—if they could grow upon their current base there was another percentage they could get.

The new offer was effectively a higher price than the offer the customer had rejected. Moreover, the incremental discounts in the new package would only be effective if the customer demonstrated enhanced performance. As a result, the pricing manager was able to extract value created that would have been ceded to the customer:

> The difference between where we had ended up in our previous discussion and what I agreed to with them and offered through the [new] letter was approximately $200,000 difference on an annual basis less.

The customer accepted that higher price a few days later.

Renegotiating higher prices with a major customer is a major accomplishment. The outcome demonstrates both elements of effective price setting. First, it prevents the firm allocating value created to the customer. Second, the outcome demonstrates a careful matching of the price offered to the customer's willingness to pay. Without the capability, the firm had been ready to offer a price that would have been too low. With it, the firm managed to demonstrate that a higher price was appropriate.

The critical issue was knowing what price the firm could offer to this customer. In order to know whether the customer would accept a higher price, the firm needed the internal and external dimensions of its price-setting capability. Consistent with the resource-based view, these capabilities consisted of both the tangible and intangible skills of the participants in the price analysis. These skills were linked to firm-specific organizational routines, such as the negotiation processes, and resources, such as the computer systems and pricing history. Without the knowledge of the players, without the diverse set of specific skills, and without the existing pricing systems, the manager could never have altered the share of value that went to the firm. Moreover, the capabilities and resources were developed over time at the firm. The capabilities therefore satisfy the central conditions for sustained competitive advantage: inimitability and imperfect mobility.

Implications for Marketing Strategy

In the preceding sections, we have developed a resource-based perspective of the process by which prices are set or changed. We suggest that the price-setting process is a capability.

The resource-based perspective suggests that, in addition to value-creating resources, firms must address resources that extract value. Our evidence also suggests that firms can compete by investing in value-extraction resources. At the firm we studied, such resources enabled the firm to set prices more flexibly, thereby responding more effectively to competitor actions. It also allowed the firm to set prices more accurately, thereby matching prices more closely to what a customer is willing to pay.

Our resource-based perspective suggests that there may be a mutual complementarity between value-creation and value-extraction capabilities. As the value of one increases, the value of the other increases also. For instance, firms with a strong portfolio of brands can find large returns to investments in additional pricing capabilities. Procter and Gamble recently chose to develop pricing capabilities in a new form of pricing for their industry, everyday low pricing (EDLP), and Ford has been developing pricing capabilities to be able to undertake smart pricing with customers and reverse auctions with suppliers. Similarly, as pricing process capability is enhanced, a firm can extract more value from investments in technical capabilities because the firm can extract a larger share of the value created.

Pricing process capabilities also enable the firm to increase the value created. Consider the yield management systems offered by airlines. An airline with an effective yield management system can offer lower prices to price-sensitive buyers (for example, leisure travelers), thereby increasing the quantity of seats demanded for any given flight, and charge higher prices to less price-sensitive buyers (for example, business travelers) thereby increasing the margins on its flights. By increasing both the quantity of seats demanded and the margins on its flights, the value of a flight increases for the airlines. This suggests that the airline can profitably offer multiple flights along different routes, thereby allowing it to create more value by offering a larger number of flights.

In contrast, a lack of attention to the complementarities between value creation and value extraction can hinder a firm. Consider, for instance, the recent work by Tripsas and Gavetti (2000) addressing the switch from analog to digital imaging technology at Polaroid. As they show, Polaroid led the camera industry in developing new digital technology. Nevertheless, Polaroid failed to bring their new technology to market because they knew no way to profit from the technology. As Tripsas and Gavetti point out, Polaroid believed that it could make money only through the sale of film and film developing—even though Polaroid had a strong

capability in its camera technology and its managers could have easily extended that capability into digital imaging. Following a "razors and razor blades" strategy, however, Polaroid sold cameras (analogous to razors) with the expectation that they would extract value through the sale of film (analogous to razor blades). In other words, Polaroid's entire value-extraction capability was built around film sales. With digital imaging, however, there was no film to be sold, so the capabilities built around the sale of film and film developing offered no way to extract value. Polaroid managers failed to develop new pricing capabilities as they built their new value-creation capabilities.

Polaroid managers' adherence to their old model of making a profit on cameras through sales of film—what we here define as a value-extraction capability—prevented them from bringing a new technology to market. Polaroid managers failed to see the mutual complementarity between its value-creation and value-extraction capabilities, and when new technologies came about, they could no longer see how to extract value from the new technology.

Our resource-based perspective suggests that when setting marketing strategy managers should think of a portfolio of pricing capabilities, ranging from value creation to value extraction. Firms must maintain an appropriate balance between value-creation capabilities and value-extraction capabilities. Such a balance may shift over time. In some instances, firms might need to focus exclusively on value creation. In others, it may be important to focus on value extraction. For Polaroid, for example, strong value-creation capabilities in digital imaging implied the need to develop corresponding value-extraction capabilities for cameras. Without the value-extraction capabilities, the firm found itself powerless to respond to new technologies.

Viewing the process by which prices are set as a capability suggests that the real pricing questions in marketing lie in the decisions a firm makes about its pricing process capabilities. Any particular pricing decision matters much less than the resources, skills, and routines—the capabilities—applied to enhance the effectiveness of the price-setting process. Pricing decisions depend on the ability to respond adaptively to the decisions of competitors and customers. Thus, the process by which prices are set is a higher level game played out in the infrastructure that managers develop to set prices. Firms compete on price not in setting day-to-day prices, but in building and developing price-setting capabilities that define the pricing outcomes well into the future for the firm.

Given this, a resource-based view of the price-setting process fundamentally alters the way economists and marketers should understand and model pricing. The pricing capabilities and its constituent resources and routines define every aspect of the pricing decisions managers and firms face. Consider the tactical decision to change prices in response to a change in the marketplace, which lies at the heart of the economics literature on price rigidity (Carlton 1986; Blinder, Canetti, Lebow, and Rudd 1998). The firm has to figure out the exact competitive prices being offered in the marketplace. Our perspective shows that this will be a difficult task, especially in industries in which sellers offer different prices to different groups of customers. Even if a firm manages to get this information accurately, it has to decide

whether it makes sense to match prices. Firms serving different customer segments, where these segments in turn are differentiated, face considerable uncertainty about the price elasticity and the relative profitability of these different groups of customers. This uncertainty is exacerbated because the pricing process involves personnel from different parts of the firm, each of whom has different sets of information and assumptions about the customer. In such a situation, the firm's response will depend on the existing resources, skills, routines, and coordination mechanisms. Firms incapable of responding adaptively to price competition might lack the routines for resolving disputes internally. The issue of effective price response, then, lies in enhancing the process capabilities to set or change prices.

Future research could extend this resource-based view of pricing to consider how pricing process capabilities vary across industries and across different market structures. Research might compare industrial versus consumer markets. We studied pricing process at a firm that makes 8,000 products in the industrial market. The routines, coordination mechanisms, and interconnected resources we observed might differ from those than at an airline, where yield management is crucial, or in grocery stores, where prices are easier to compare. The critical routines or coordination mechanisms may vary in different settings. Nevertheless, the resources and capabilities will define the ability to respond.

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